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A new species of *Hemineura* Tetens, 1891 from the semi-arid region of Los Monegros (North-East Spain) with notes on its biology

(Insecta, Psocoptera, Elipsocidae)

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Hemineura blascoi, spec. nov. from the semi-arid zone of Los Monegros is described and illustrated. Some notes on the differences in both resting site selection and phenology among *H. blascoi* and its congeneric species *H. dispar* and *H. sclerophallina* are also included.

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Introduction

The genus *Hemineura* Tetens, 1891 comprises 9 species which are distributed along the Western Palaearctic. All of them overwinter as adults and show a marked sexual dimorphism where males are winged and females are apterous. Recently, the genus *Hemineura* has received more attention from both systematic and biological points of view. The description of new species (Lienhard 1986. Lienhard & Halperin 1988, Badonnel 1987, 1989) as well as the increase of data about its biology (Guillaumont 1977, Baz 1991, 1992) have notably augmented the knowledge of this interesting psocid genus which, in many cases, appears as the dominant insects on shrubs during winter (see Baz 1989).

In this paper, a new species of *Hemineura* is described and illustrated, and its taxonomical affinities are discussed. Moreover, the preferences for the substrate plant selection as well as the seasonal distribution of this new species are discussed and compared with those of other coexisting species of *Hemineura*.

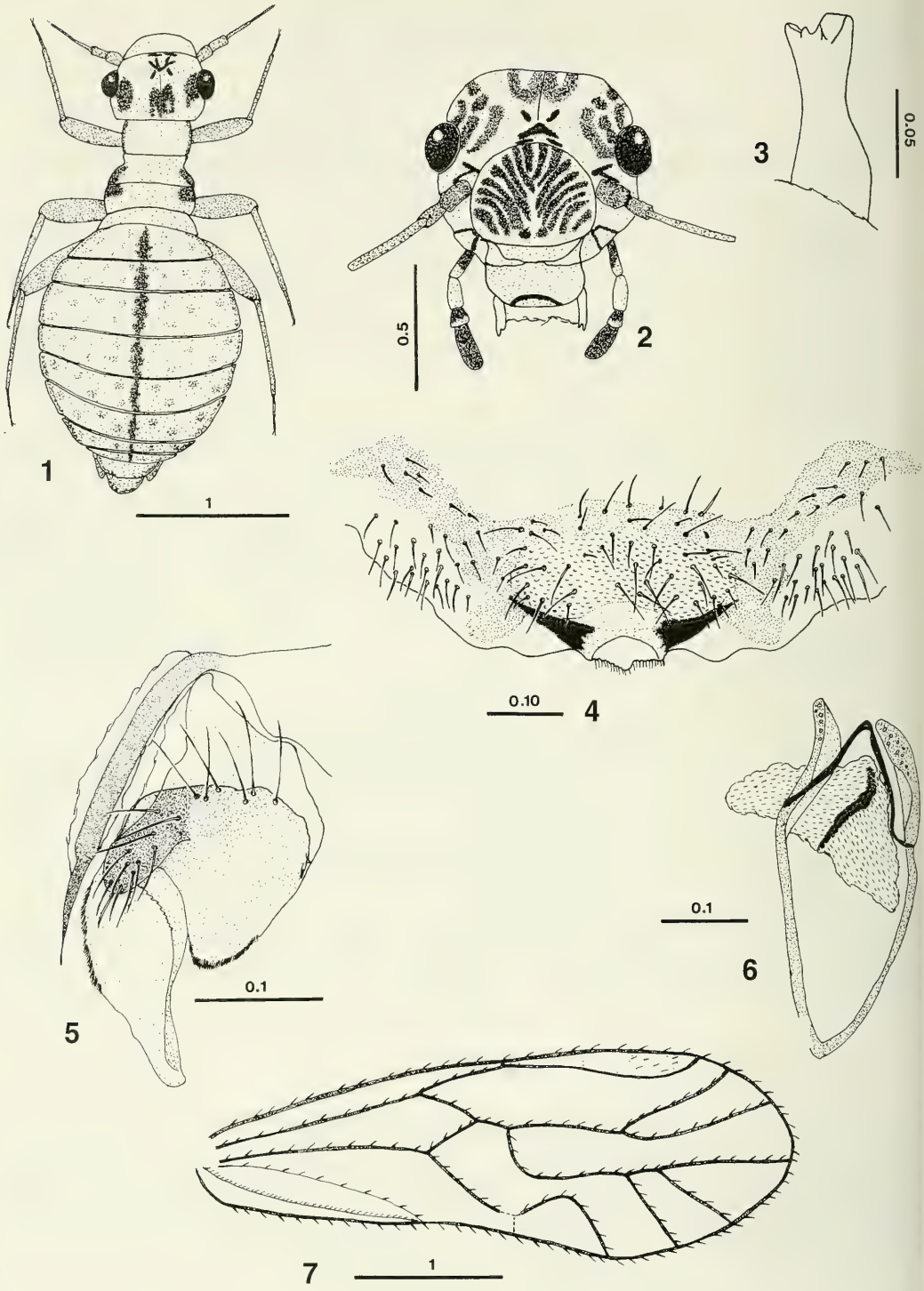
Methods

The new species has been found during a more general study on the Psocoptera of the semi-arid zone of Los Monegros. During 1992, psocids were sampled fortnightly by beating vegetation. On each occasion, 20 different plant species were sampled which include trees, bushes and shrubs.

Morphological observations were made on slide preparations in Hoyer's medium under a compound microscope. Colour observations were made on whole specimens in alcohol with direct light under a dissecting microscpope. Measurements were made with a filar micrometer.

The following abbreviations are used in connection with the measurements.

BL	body length
FW	forewing length
HW	hindwing length
IO/D	least distance between compound eyes divided by greatest antero-posterior eye diameter in dorsal view



Figs 1-7. *Hemineura blascoi*, spec. nov. 1-5. ♀: 1. Habitus; 2. Frontal view of head; 3. Lacinial tip; 4. Subgenital plate. 5. Gonapophyses; 6-7. ♂: 6. Phallosome; 7. Fore wing. Scales in mm.

PO	transverse diameter of eye divided by greatest antero-posterior diameter of eye in dorsal view
AL	antennal length
f1, f2, f3	first, second and third flagellomeres
F	hind femur length
T	hind tibia length
t1, t2, t3	first, second and third hind tarsomere.

All material apart from some paratypes in the Zoologische Staatssammlung, München (ZSM) is deposited in the author's collection at the Department of Animal Biology, University of Alcalá de Henares (UAH).

Systematics

Hemineura blascoi, spec. nov.
(Figs 1-7)

Types. Holotype and allotype: ♂, ♀, Spain, Zaragoza, Pina de Ebro, 24-III-1992, J. Blasco leg. (UAH). - Paratypes: 7♂♂, 37♀♀ (UAH, ZSM).

Other material (from the same locality): 3♀♀, 23-III-1992; 5♀♀, 24-IV-1992; 15 nymphs (♂), 23 nymphs (♀), 5-XII-1992; 1♂, 27 nymphs (♂), 16 nymphs (♀), 20-XII-1992; 1♂, 27 nymphs (♂), 32 nymphs (♀), 9-I-1993 (UAH).

Description

Female. Coloration. Head (Fig. 2) whitish, with brown spots and light-brown longitudinal striae on postclypeus, median frontal spot as in Fig. 2. Antenna brown; maxillary palpi light-brown, last segment darker. Legs light brown, tarsi darker. Abdomen whitish, tergites finely mottled with small brown spots, medially somewhat more pigmented forming a brown band along the abdomen (Fig. 1).

Morphology. Apterous. Compound eyes small; ocelli absent. Lacinia as in Fig. 3. Antenna with Sc, p and 13 flagellomeres. Pretarsal claws with slender basal process, distinct preapical tooth and straight, pointed pulvillus. Pearman's Organ on hind coxa scarcely developed. Terminalia: Epiproct simple, paraprocts with 5 trichobothria. Subgenital plate (Fig. 4) without setae-bearing lobes on posterior margin. Gonapophyses as in Fig. 5.

Measurements (allotype): BL: 3 mm; AL: 2.08 mm; flagellomeres (μ): f1: 376; f2: 320; f3: 280; IO/D: 3.18; PO: 0.63; hindleg (μ): F: 672; T: 1088; t1: 264; t2: 104; t3: 120; index t1/t2+t3: 1.17.

Male. Coloration. Head whitish with brown spots and light-brown striae on postclypeus. Antennae and maxillary palps as in the female. Wings hyaline (Fig. 7). Abdomen light with small brown spots.

Morphology. Antenna fairly long. Ocelli present. Fore wing (Fig. 7) hyaline without strong pattern; setae on veins and wing margin few, sparse and small. Claws as in the female; Pearman's Organ on hind coxa scarcely developed. Phallosome (Fig. 6) with sclerifications of penial bulb; epiproct simple; paraprocts with ca. 15 trichobothria; hypandrium simple.

Measurements (holotype): BL: 2.9 mm; AL: 2.99 mm; FW: 4.04 mm; HW: 3.02 mm. Flagellomeres (μ): f1: 640; f2: 528; f3: 416; IO/D: 2.18; PO: 0.57. Hindleg (μ): F: 736; T: 1328; t1: 352; t2: 112; t3: 120; index t1/t2+t3: 1.51.

Comments

The new species is closely related to both *H. bigoti* Badonnel, 1970, known from southern France, Greece and Spain (see Badonnel 1970, Lienhard 1981, Baz 1988) and *H. trudiae* Lienhard & Halperin, 1988, known from Israel. These three species are the only ones in the genus *Hemineura* that lack the two setae bearing lobes on posterior margin of the subgenital plate.

H. blascoi seems to be more closely related to *H. trudiae* in relation to the external valve of the gonapophyses, which is short and bears hairs on the entire external surface in both species, while the head pattern colour resembles those of *H. bigoti*. However, general coloration, structure of gonapophyses, and the subgenital plate pigmentation distinguish it inambiguously.

Biology

Individuals of *H. blascoi* were caught during a more general study on the psocid fauna of the semi-arid region called Los Monegros in north-east Spain.

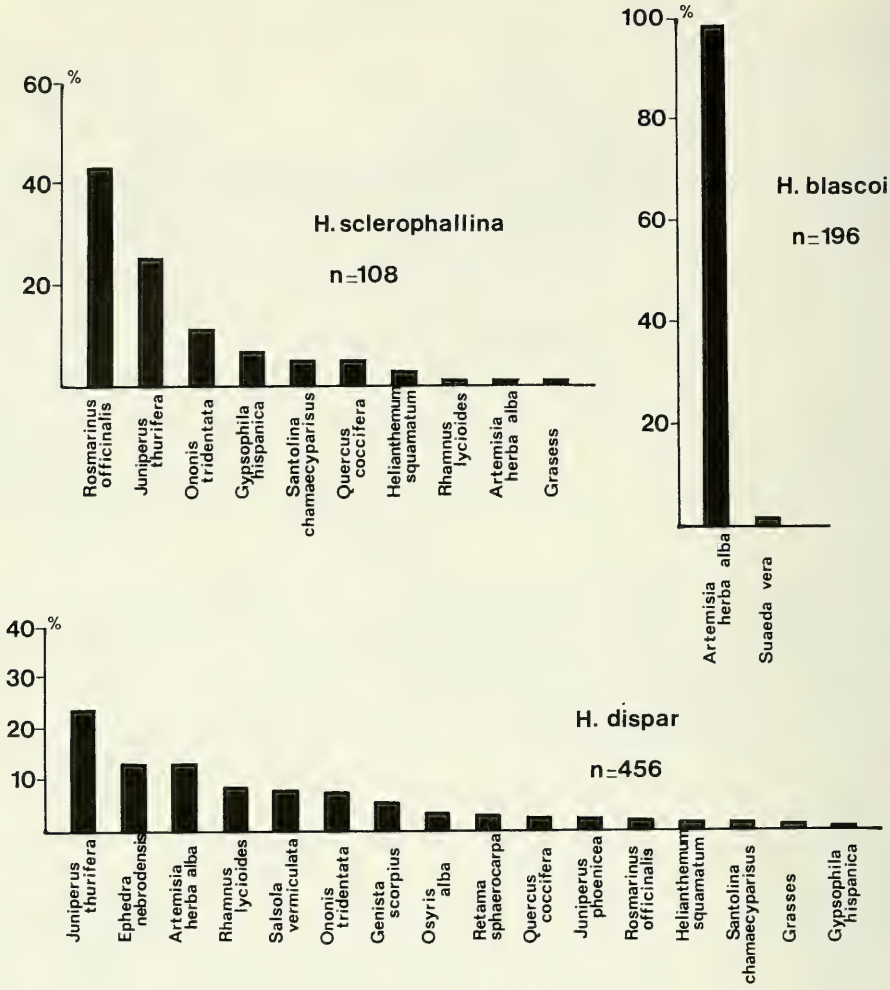


Fig. 8. Percentage distribution of the three species of *Hemineura* on the different plant-species where they have been caught.

During this study two other coexisting species of *Hemineura* were sampled, viz. *H. dispar* and *H. sclerophallina*.

A detailed analysis of the capture data shows some relevant differences in both the substrate plant selection and phenology among the three coexisting species. Fig. 8 shows the percentage distribution of the three species on the different plant species studied. *H. blascoi* shows a great degree of specificity in the substrate plant selection, with more than 90 % of individuals caught on the compositae *Artemisia herba-alba*. In the case of *H. sclerophallina* ca. 70 % of individuals were caught on both *Rosmarinus officinalis* and *Juniperus thurifera*, whereas *H. dispar* lives on a wide range of trees, bushes and shrubs (16 different plant species, including grasses).

On the other hand, in Fig. 9 the phenological pattern of the three species is illustrated. These figures show a different peak of abundance for each species. The highest number of *H. blascoi* adults appear in late March while the number of nymphs is highest in January.

In *H. dispar* and *H. sclerophallina* the adult peak occurs in December and January-February, respectively.

These results suggest that *H. blascoi* is different from the other species of *Hemineura* not only in its morphological features but also in its biology. Furthermore, the difference in resting site selection as well as the different time period in which each species is more abundant, allows the coexistence among

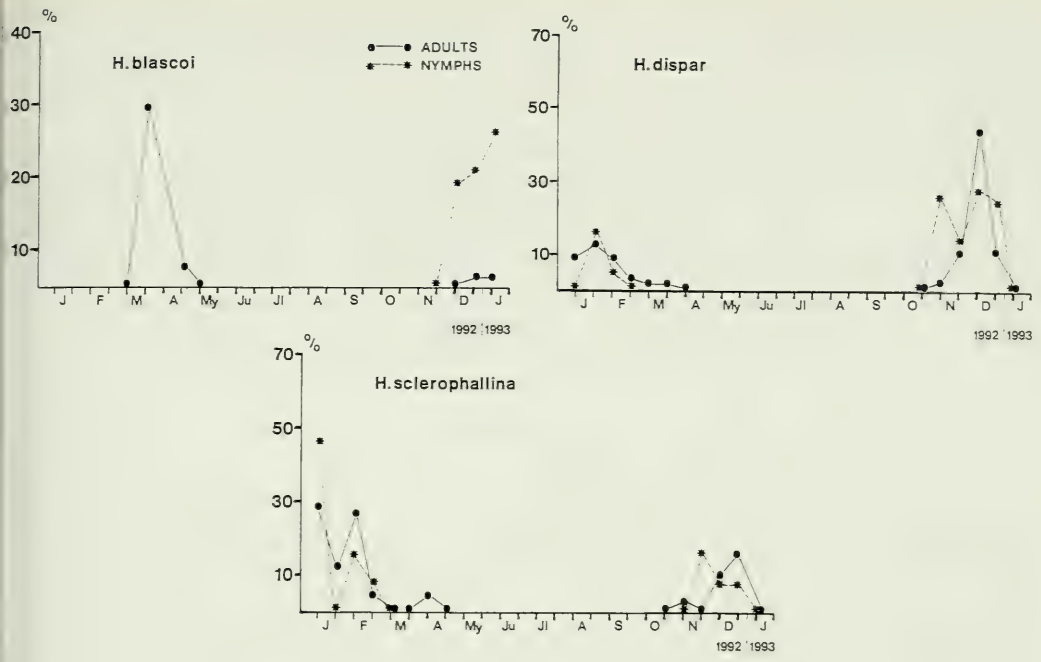


Fig. 9. Phenology of the three species of *Hemineura*.

the three species in an extreme habitat (see Baz 1989).

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